


May 1, 2003

MEMORANDUM FOR: John Carmichael, SAFMC SSC Chair

CC: J. Merriner, G. Scott

FROM: Mike Prager, NOAA Beaufort Lab



SUBJECT: Variability around SEDAR black seabass and vermilion snapper benchmark estimates

This is to follow up on the recent request by the SSC Subcommittee for measures of uncertainty around benchmarks estimated in SEDAR assessments of black seabass and vermilion snapper. In last year's SEDAR assessment of red porgy, 80% confidence intervals were provided around the benchmark estimates, but for technical reasons, it was not possible to compute such confidence intervals for the two more recent assessments. Therefore, we have used a nonparametric method to approximate them. I am happy to forward the following computations from our group. Questions should be addressed to Dr. Kyle Shertzer.

## I. Black Seabass

To approximate an 80% confidence intervals, we have tabulated 10<sup>th</sup> and 90<sup>th</sup> percentiles from the vector of sensitivity run estimates (Table 6.2 of assessment report, dated 14 Feb 2003), statistically weighted by the probabilities assigned by the Assessment Workshop (Table 6.1). That is, a value with weight 1/16 was represented in the vector once; a value with weight 2/16 was represented twice; and a value with weight 4/16 was represented four times. After the full vector was constructed, percentiles were determined and are tabulated below.

	Fmsy	MFMT	SSBmsy	MSST	MSY	F(2001)/ Fmsy	SSB(2002)/ SSBmsy
Base Run	0.2	0.04	1.35E4	9.46E3	1.73E3	5.22	0.13
10 <sup>th</sup> Percentile	0.14	0.01	0.40E4	2.82E3	0.99E3	2.13	0.06
90 <sup>th</sup> Percentile	0.47	0.36	2.53E4	20.2E3	3.11E3	9.51	0.54

The values for MFMT are based on the default MSY control rule in Restrepo et al. (1998), *Technical Guidance On the Use of Precautionary Approaches to Implementing National Standard 1* . . . . In that default control rule, MFMT becomes smaller as the stock size declines below MSST. It is our

understanding that under the National Standards Guidelines, the Council could specify a different MSY control rule. If they were to specify, for example,  $MFMT = F_{MSY}$ , the tabulated statistics for  $F_{MSY}$  would also apply to MFMT.

## II. Vermilion Snapper

The 80% confidence intervals on vermilion snapper benchmarks were also approximated as the 10<sup>th</sup> and 90<sup>th</sup> percentiles from the weighted vector of estimates (with corrected MRFSS landings). They are tabulated below.

Because the Assessment Workshop and Review Workshop expressed little confidence in the estimates of biomass-related benchmarks for vermilion snapper, and the Subcommittee preferred to consider them unknown, we have not given intervals for them. Thus, there are no intervals for  $B_{MSY}$  or  $MSST$ .

Lacking good estimates of the stock-biomass status relative to the corresponding benchmark, it is not possible to use the default control rule of Restrepo et al. to define MFMT. Therefore, the Council might wish to use  $MFMT = F_{MSY}$ . The Review Workshop and SSC Subcommittee recommended using  $F_{max}$  as a proxy for  $F_{MSY}$ . If the Council adopts that recommendation and uses that control rule, the approximated interval on  $F_{max}$  would be the appropriate one to use for MFMT.

	Fmsy	Fmax	F(2001)/ Fmsy	F(2001)/ Fmax
Base Run	0.36	0.375	1.78	1.71
10 <sup>th</sup> Percentile	0.175	0.298	0.045	0.034
90 <sup>th</sup> Percentile	0.373	0.40	2.33	1.94